

The forage analysis alphabet and your profitability

Tim Snyder for *Progressive Dairyman*

Optimum forage quality is critical with grain, commodity and forage prices at historic highs. Relative feed value (RFV) was a ranking tool useful in the past. It incorporates ADF and NDF to estimate intake and digestion. Relative forage quality (RFQ) is of greater utility to value hay crop forages today. It incorporates additional nutrient analyses including a measure of vitro digestibility. Fiber digestibility differs within a forage species, largely related to the amount of lignin in the neutral detergent fiber (NDF). Also, legumes and grasses are digested differently due to cellulose, hemicellulose and lignin levels and bonds. Undersander and Moore describe the calculation differences in detail and the advantages of RFQ.

Legumes typically have a faster speed of digestion but higher indigestible lignin bound to NDF (reported as lignin, percentage of NDF). Grasses are lower in lignin,

percentage of NDF, but can be more slowly digested, especially if harvest is delayed. In the past legumes may have been preferred for higher milk production, but newer grass, small-grain forage and BMR sorghum/sudan varieties and earlier harvesting make grasses and legume/grass mixtures more attractive. Double-cropping winter and summer annual grasses has gained popularity and can fit nutrient management plans and crop rotations nicely.

RFQ improves on the RFV concept by including more nutrients and newer digestibility measures. NDF (fiber) digestibility, percentage of NDF (NDFD) is routinely run at commercial labs by digesting the dried/ground forage with rumen fluid for a specific number of hours. NDFD and other lab results are incorporated into energy calculations in RFQ. It's important to know that while CP, ADF and NDF procedures are reasonably standardized, lab NDFD procedures

can vary somewhat, yielding different results between labs. Also, different digestion time points are available. Many labs participate in quality control programs such as the NIR Consortium and National Forage Testing Association (NFTA); NDFD is not yet monitored.

Table 1 gives 2010 averages for legume hay from two large commercial labs. Both are reputable

and participate in quality assurance programs. The samples tested are not the same and the point is not to pick which lab is "better." The point is that, for consistency of evaluation, you must compare within a lab and time point. Also, note two mixed hays with the same CP, ADF and NDF, but different NDFD values have different RFQ numbers, reflecting the higher digestibility of hay #2.

Grasses are more fairly ranked with RFQ. Legumes with the same RFV that have lower digestibility are ranked lower with RFQ. Corn silage is not ranked with RFQ/RFV. RFQ and RFV are not used by nutritionists in ration formulation. They are useful for ranking forages for animal feeding allocation (higher-value RFQ fed to higher-requirement animals) and for pricing from a common basis.

Our consultants have a spreadsheet that compares the value of a haycrop on its RFQ/RFV number, and moisture/DM percentage. From a survey of recent auction prices for dairy-quality hay (RFQ/RFV=150), we determine the value per RFQ/RFV point at 90

PROFIT

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Tim Snyder
Nutrition Manager
Renaissance Nutrition
Inc.

TSnyder@RenNut.com